A Dyadic Analysis of Partner Violence and Adult Attachment: An Application of the Actor-Partner Interdependence Model

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Abstract

Intimate partner violence (IPV) is generally thought of as a crime against women (Banks, Kini, & Babcock, 2013; Tjaden & Thoennes, 2000). However, there is mounting evidence that suggests high rates of bidirectional violence in which both the man and female partner perpetrate acts of physical aggression (Langhinrichsen-Rohling, Misra, Selwyn, & Rohling, 2012; Schafer, Caetano, & Clark, 1998; Straus & Gelles, 1986). Insecure attachment orientation has consistently been linked to individual IPV perpetration directly (Babcock, Jacobson, Gottman, & Yerington, 2000; Holtzworth-Munroe, Stuart, & Hutchinson, 1997; Kesner & McKenry, 1998), or through mediating or moderating variables (Fournier, Brassard, & Shaver, 2011; Mauricio & Gormley, 2001; Scott & Babcock, 2010). However, studies of individuals have limitations because they do not take into account the dynamic nature of adult romantic relationships on the maintenance of IPV, identifying instead one perpetrator and one victim. The current study utilizes the structural equation model version of the Actor-Partner Interdependence Model (APIM; Kenny, 1996) to examine how partners' attachment characteristics influence the maintenance of each other's partner violence. Results from the current study suggest that attachment characteristics of both partners influence each other to maintain IPV.

A Dyadic Analysis of Partner Violence and Adult Attachment: An Application of the Actor-Partner Interdependence Model

Introduction

IPV includes physical, psychological, and sexual violence toward a former or current romantic partner (Center for Disease Control, 2013). It is considered a serious problem that affects many people around the world, including millions of people in the United States (Center for Disease Control, 2013). According to a national survey over 13% of couples report the presence of IPV in their relationships (Cunradi, Caetano, & Schafer, 2002). Approximately 1.5 million women report being physically or sexually assaulted by their partners in a given year (Tjaden & Thoennes, 2000).

Women were traditionally thought to be the primary victims of IPV (Banks, Kini, & Babcock, 2013; Tjaden & Thoennes, 2000). However, as more studies have examined female violence and bidirectional violence, a phenomenon where both men and female partners are perpetrators, the evidence suggests that men are also at risk (Schafer, Caetano, & Clark, 1998; Straus & Gelles, 1986). In fact, a meta-analysis and a recent literature review found that women actually perpetrate IPV at equal or even higher rates than men (Archer, 2000; Langhinrichsen-Rohling, Misra, Selwyn, & Rohling, 2012), although women tend to cause less injury to their partners. Furthermore, bidirectional violence is common across a wide range of participants that included population-based to criminal justice samples (Langhinrichsen-Rohling, et al., 2012).

Given the high rates of partner violence and the bidirectional perpetration of violence, it is apparent that IPV is better understood in the context of both partners' characteristics having some unique and combined effect on the outcome of partner violence. In general, it

may be better for research to move away from a strict perpetrator-victim perspective of partner violence to a perspective that takes into account the working dynamic of both partners' characteristics when understanding the etiology and maintenance of IPV. By doing so, the relationship dynamic (i.e. both partners' characteristics) will be better understood in the context of IPV, and be more effectively incorporated into intervention strategies.

Attachment

According to Bowlby's attachment theory (Bowlby, 1969; 1973; 1980), people are born with an innate need for close attachments with significant others to have basic needs met. Individuals develop expectations during childhood regarding the availability of caregivers to provide basic materials for survival and to fulfill emotional needs. As the individual develops, these expectations become more established as "internal working models" about the self, others, and the world. For instance, an individual may develop an insecure attachment with a caregiver after several years of the caregiver being unavailable to fulfill basic needs for the child. Based on the expectation that the caregiver is inconsistent or unavailable, the individual may develop an internal working model of the self as being unlovable or likely to be abandoned. The internal working model of having a fear of abandonment is theorized to generalize to other close relationships throughout the individual's life, including adult romantic relationships. In this way, the initial bond between a child and parent predicts the success of the child's development of close personal relationships in adulthood.

Hazan and Shaver (1987) applied childhood attachment theory to adults, arguing that childhood attachment styles predict adult attachment styles in romantic relationships. They identified three adult styles, resembling those formed in childhood—secure, avoidant, and

anxious-ambivalent. A secure adult attachment suggests a happy, healthy, and trusting intimate relationship, marked by effective communication and a mutual fulfillment of needs. An avoidant adult attachment suggests a fear of commitment and a lack of trust. On the other hand, an anxious-ambivalent adult attachment suggests a mixed presentation, with feelings of highs and lows about the relationship and obsessive thoughts about the other person. According to Hazan and Shaver (1987), the attachment style formed during childhood persists throughout the individual's lifetime and influences adult interpersonal and intimate relationship functioning.

Bartholomew and Horowitz (1991) proposed a model of adult attachment based on a binary (positive or negative) model of self and a binary (positive or negative) model of others. The model resulted in four possible attachment styles: secure, preoccupied, dismissing, and fearful. A secure attachment represents a positive model of self and a positive model of others, characterized by someone who is comfortable with intimacy and autonomy. A preoccupied attachment represents a negative model of self and a positive model of others, characterized by someone who is over-concerned with relationships. A dismissing attachment style represents a positive model of self, coupled with a negative model of others, and is characterized by someone who is averse to intimacy. The final attachment style, fearful attachment, represents a negative model of self and a negative model of others, and is characterized by someone who is socially avoidant and has a fear of intimacy. The Bartholomew and Horowitz (1991) attachment model has become widely accepted in IPV and attachment research, and thus, was the categorical model incorporated in the current study.

In addition to being classified according to categories, attachment has also been

classified dimensionally. Most evidence from factor analytic studies suggests that dimensional measures of adult attachment result in two factors, anxiety and avoidance (Bäckström & Holmes, 2001; Parker, Johnson, & Ketring, 2011; Ravitz, Maunder, Hunger, Sthankiya, & Lancee, 2010; Sibley & Liu, 2004; Stein, Koontz, Fonagy, Allen, Fultz, Brethour, ... & Evans, 2002; Tsagarakis, Kafetsios, & Stalikas, 2007; Wei, Russell, Mallinckrodt, & Vogel, 2007). Collins and Read (1990) developed a dimensional measure of attachment, the Adult Attachment Scale (AAS), based on Hazan and Shaver's (1987) three-category model. The AAS is comprised of three dimensional factors: Depend, Anxiety, and Close. The Depend factor represents the extent to which an individual believes others can be depended on to be available when needed. The Anxiety factor represents the extent to which an individual feels anxious about being abandoned or unloved, and the Close factor represents the extent to which an individual is comfortable with closeness and intimacy. These factors have strong correlations with the two general attachment factors. The Close and Depend factors correlate with the avoidance dimension ($r = .86$ and $r = .79$, respectively), and the Anxiety factor correlates with the anxiety dimension ($r = .74$; Brennan, Clark, & Shaver, 1998). Collins (2008) proposed a method for deriving the anxiety and avoidance dimensions from AAS item responses. Furthermore, the Close, Depend, and Anxiety factor scores can be converted to Bartholomew and Horowitz's (1991) categorical attachment styles.

Theories support a link between insecure attachment and IPV. According to Bowlby's (1984) attachment theory violent acts against an intimate partner may arise from not having one's attachment needs met. Insecure attachment has also been associated with a fear of separation from the attachment figure, which is thought to lead to behaviors of self-

protection (Murray, Holmes, & Collins, 2006) or violence (Walker, 1983). Empirically, insecure attachment characteristics have been linked to both IPV perpetration (Babcock, et al., 2000; Holtzworth-Munroe, Stuart, & Hutchinson, 1997; Kesner & McKenry, 1998) and victimization (Kesner & McKenry, 1998; Scott & Babcock, 2010) for individuals in intimate relationships. Holtzworth-Munroe, et al. (1997) found that violent husbands, compared to nonviolent husbands, were more anxious about relationship abandonment. They also found that violent husbands were more avoidant of dependency and more uncomfortable with closeness than nonviolent-nondistressed husbands. These findings suggest that characteristics representative of attachment insecurity are predictive of husband-to-wife violence. When studying attachment categorically using the gold-standard measure of attachment, the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), Holtzworth-Munroe, et al. (1997) found that violent husbands were more likely to be classified as having preoccupied or disorganized attachment orientations.

Babcock, et al. (2000) also found that violent husbands were more likely to be classified into one of the insecure attachment categories than nonviolent husbands on the AAI, and that particular wife behaviors predicted acts of violence by men of different attachment styles. Specifically, using sequential analyses of descriptions of past violent episodes, a preoccupied husband's violence was often precipitated by a wife withdrawing from her husband; whereas a dismissing batterer’s violence tended to be precipitated by his wife being defensive or standing up to her husband. They theorized that preoccupied batterers' violence is in response to abandonment fears whereas dismissing batterers' violence functions as a form of control over his partner. Although wife behaviors during violent incidents were examined in this study, wife attachment styles were not considered.

Although these studies provide basis for studying attachment as it relates to violence perpetration, they are limited by their foci on male-to-female violence and on individual attachment patterns. High rates of bidirectional violence demonstrate that IPV perpetration is not a male-dominated phenomenon, and thus, require researchers to include the study of women's violence perpetration in experimental designs. Furthermore, more appropriate statistical procedures are available to include both partners in the study of attachment's influence on IPV. The next step in couples' research is to include both partners in the analyses to understand how partners' attachment characteristics influence each other to instigate and maintain partner violence.

How partners' attachment styles interact to influence violent relationship outcomes has not been widely studied. Theoretically, it may be problematic when partners have dissimilar attachment styles. Kesner and McKenry (1998) found that the female partners of violent men are more likely to have an insecure adult attachment style. They theorized that the behaviors of one partner with a secure attachment style may be misinterpreted as signals of rejection or faltering commitment by the partner with an insecure attachment style. This perceived threat triggers the insecure partner's unwarranted violence toward the partner with a secure attachment. In this way, having at least one partner with an insecure attachment may influence both partners' involvement with partner violence. Given the dynamic nature of adult couples and the established findings that individuals' insecure attachment styles predict relationship violence, it is important for IPV research to use appropriate statistical methods to examine how partners' attachment characteristics influence each other to engage in relationship violence.

The Actor Partner Interdependence Model

Both members of a romantic relationship interact with each other in a non-independent way and exert mutual influence on each other's thoughts, emotions, and behaviors. In fact, many relationship theories recognize that one partner's characteristics may influence the other partner's outcomes (for a summary, see Kenny, Kashy, & Cook, 2006). The interdependence of couples' responses poses quite a problem for relationship researchers and could lead to biased results if analyzed improperly (Campbell & Kashy, 2002). There is a method, however, that can parse out the unique and independent effects (actor effects) and the effects dependent upon the other partner (partner effects). This method is known as the Actor-Partner Interdependence Model (APIM; Kenny, 1996), and it is popular in couples' research because it treats the dyad as the unit of analysis.

Although popular in couples' research (Adams & Baptist, 2012; Burr, Hubler, Larzelere, & Gardner, 2013; Campbell, Simpson, Kashy, & Rholes, 2001; Eid & Boucher, 2012; Erol & Orth, 2013; Gana, Saada, & Udas, 2013; Stroud, Durbin, Saigal, & Knobloch-Fedders, 2010), application of the APIM model is less commonly used with violent couples. Especially considering the high rates of bidirectional violence (Langhinrichsen-Rohling et al., 2012; Straus & Gelles, 1986) between intimate partners, it is surprising that the APIM model has rarely been used with this population. By applying the APIM model to violent couples, IPV research may be able to understand how individual characteristics contribute to violence perpetration within the framework of the couple and be able to understand the individual and partner factors that maintain IPV.

Overview of the Present Study

The current study has the major aim of understanding how adult attachment characteristics predict three forms of intimate partner violence: physical, psychological, and

sexual violence. Since it is well established that self-reports of violence are often underreported (Hamby, 2005; Riggs, Murphy, & O'Leary, 1989; Sugarman & Hotaling, 1997), a composite score average of self- and partner-report of the target's violence was created and utilized for the dependent variables. Both men and women's composite violence scores and self-reported attachment styles were entered into APIM models to test the actor and partner effects of adult attachment characteristics that are associated with both male and female perpetration of IPV.

Two analogous sets of models were tested in the current study. The first set of models treated attachment characteristics as continuous variables (i.e. avoidance and anxiety). The second set of models treated attachment characteristics as categorical variables (i.e. secure, preoccupied, dismissing, fearful). Chi Square Difference tests were conducted to test for gender differences in effects by comparing the model when influence from men and women are allowed to differ and the model when influence from men and women are constrained to be the same. The resulting model sets were compared and interpreted. Following the interpretation of the resulting models, exploratory post hoc tests of the interactions of attachment characteristics between partners were conducted.

Hypotheses

Continuous Model Sets: Hypotheses 1-6. Hypotheses 1-3 used a Chi Square Difference Test to examine gender differences in effects for each outcome variable (Hypothesis 1, physical assault; Hypothesis 2, psychological aggression; Hypothesis 3, sexual coercion) by comparing the model fit of APIM tests when effects are free to vary for men and women and when effects are constrained to be the same. Hypotheses 4-6 were analyzed by the APIM tests to determine actor and partner effects for each outcome variable.

Gender differences. Men and women will not differ in their actor and partner effects for each outcome variable.

Actor effects. Actor scores on the avoidance and anxiety attachment dimensions will be positively associated with one's own IPV perpetration.

Partner effects. Partner scores on the avoidance and anxiety attachment dimensions will be positively associated with one's own IPV perpetration.

Categorical Model Sets: Hypotheses 7-12. Hypotheses 7-9 were planned to use a Chi Square Difference Test to examine gender differences in effects for each outcome variable (Hypothesis 7, physical assault; Hypothesis 8, psychological aggression; Hypothesis 9, sexual coercion) by comparing the model fit of APIM tests when effects are free to vary for men and women and when effects are constrained to be the same. Hypotheses 10-12 were planned to be analyzed by the APIM tests to determine actor and partner effects for each outcome variable.

Gender differences. Men and women will not differ in their actor and partner effects for each outcome variable.

Actor effects. Having a fearful or preoccupied attachment style will be positively related to one's own perpetration of physical assault, psychological aggression, and sexual coercion. Having a secure or dismissing attachment style will not be associated with one's own IPV perpetration.

Partner effects. Having a partner with a dismissing, fearful, or preoccupied attachment style will be associated with high rates of one's own physical assault, psychological aggression, and sexual coercion. Having a partner with a secure attachment style will not be associated with high rates of one's own IPV perpetration.

Model Comparisons: Hypotheses 13-15. The continuous models for physical assault, psychological aggression, and sexual coercion will explain significantly more of the variance than the categorical models for the same outcome variables according to the Chi Square Difference tests of model comparisons at the .05 significance level.

Post Hoc Interactions. An exploratory test of the interactions between attachment characteristics were conducted for the resulting model associated with each outcome variable.

Method

Participants

Couples (N = 214) were recruited from the community through local newspaper advertisements and flyers stating "Couples experiencing conflict needed to participate in a research study." Eligible participants had to be 18 years of age, married or living together as if married for at least six months, heterosexual, and able to speak and write English proficiently. Trained undergraduates administered a telephone screening interview of a modified version of the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and the Dyadic Adjustment Scale (DAS; Spanier, 1976) to the female partners to determine eligibility for the study. Based on the telephone screening, couples were included if they reported at least two incidents of aggression in the past year, or reported moderate to severe levels of relationship distress with no accompanying aggression between partners. Moderate to severe levels of relationship distress were determined by a score less than 4 out of 7 on item 31 of the DAS, where 1 is "very unhappy", 4 is "happy", and 7 is "perfectly happy" with the present relationship.

From the original studies, 51 couples were excluded from the present analyses if

either partner did not complete relevant questionnaires. Therefore, 163 violent and non-violent couples were included in the present analyses. Men's average age was 31.90 (*SD* = 9.51), and women's average age was 30.29 (*SD* = 9.61). Mean gross family income was approximately $48,000 per year (*SD* = 133,154). The median education level was some college. The majority of the sample was African American (51.5%), with 28.2% White, 13.8% Hispanic, 2.5% Asian, and 4% Native American or Other. The average length of relationship was 4.43 years (*SD* = 4.56).

Procedure

Questionnaire and observational data were collected as part of two larger studies in which male participants came into the lab for two separate assessment sessions, and their female partners came into the lab during the second session (Babcock, Graham, Canady, & Ross, 2011; Babcock, Roseman, Green & Ross, 2008). Session one lasted approximately three hours and required the male participant to attend alone, and session two lasted approximately 3 hours and required participation by both partners. During the first assessment session, male participants were administered a series of pencil and paper questionnaires. Then they participated in a standardized anger induction task. During the second assessment session, both male and female participants were separately administered questionnaires, and they engaged in two marital interaction tasks together. Couples were then interviewed separately about their history of relationship violence, and then reunited for debriefing and payment. Couples were paid $90 to $100 for their participation in both assessment sessions. Only attachment and intimate partner violence questionnaires were analyzed in the current study.

Measures

Intimate Partner Abuse. The Revised Conflict Tactics Scale (CTS-2; Straus et al., 1996) was administered separately to men and women. The CTS-2 is a 78-item questionnaire that is frequently used in IPV research to assess the frequency of abuse experienced between partners in the last year. There are three main subscales of intimate partner abuse on the CTS-2; physical assault, psychological abuse, and sexual coercion were specifically studied in the present analyses. A composite violence score was created for each target by averaging the self-report and the partner's report of the target on the chosen variable. For example, the composite score for the husband's physical assault was created by taking the average of his self-report of physical assault and the his wife's report of his physical assault. In contrast, the composite score for the wife's physical assault was created by taking the average of her self-report of physical assault and the her husband's report of her physical assault. The composite score was entered into analysis. Internal consistencies for the CTS-2 range from r = .79 to .95 (Straus et al., 1996).

Adult Attachment. Both partners separately completed the Adult Attachment Scale (AAS; Collins & Read, 1990), an 18-item questionnaire where individuals rate the representativeness of statements to their feelings about interpersonal relationships. The items are designed on a dimensional scale with three factors, Depend, Close, and Anxiety, each made up of six items. Examples of items include, "I find it difficult to trust others completely" (depend), "I often worry that my partner does not really love me" (anxiety), and "I find it relatively easy to get close to others" (close). Alphas for internal consistencies for the three subscales ranged from .45 to .73.

The dimensional nature of this measure allows for the detection of attachment degree on each factor. It is helpful to understand how strongly adults identify with each factor and

how that is a function of their interactions with an intimate partner. Collins (2008) proposed a method for converting AAS items to Avoidance and Attachment dimensions. In this way, we are able to measure how the degrees of attachment in the anxiety and avoidance domains contribute to the maintenance of partner violence. The attachment anxiety and avoidance scores for each participant were used when testing the continuous model sets.

An additional advantage of the AAS is that Bartholomew and Horowitz's (1991) attachment categories (secure, preoccupied, fearful, dismissing) may be derived from the scores on the three attachment dimensions (close, depend, anxiety; Collins, 2008), and therefore, allow an ease in comparison to existing research without sacrificing the advantages of dimensional measurement. The dimensions are scored on a five-point scale, where a score of three represents the midpoint. The close and depend dimensions are combined into a single composite. Scores above the midpoint are considered "high" and scores below the midpoint are considered "low." The secure attachment category represents a high score on the close-depend composite and a low score on the anxiety dimension. The preoccupied attachment category represents a high score on the close-depend composite and a high score on the anxiety dimension. The dismissing category represents a low score on the close-depend composite and a low score on the anxiety dimension. The fearful category represents a low score on the close-depend composite and a high score on the anxiety dimension. Individuals scoring at the midpoint are excluded from category placement, because they possess characteristics that are not clearly representative of one category over another. This method of converting the attachment dimensions to categories was used to determine the attachment styles of the participants. The resulting attachment styles were used when testing the categorical model sets.

Data Analytic Strategy

The structural equation model (SEM) version of the APIM model in the IBM Statistical Package for the Social Sciences, Analysis of Moment Structures (SPSS AMOS, Version 22) was used for the present analyses. An advantage of using SEM for the APIM model is the ability to test for gender differences in actor and partner effects. Due to the nature of APIM, couples were dropped from the analyses if at least one partner has missing AAS or CTS-2 data. In order to adjust for the non-independence of partner responses, the couple was treated as the unit of analysis.

Test of gender differences on the variables. Descriptive statistics were conducted by gender to find the means and standard deviations for male and female responses on two attachment dimensions (avoidance, anxiety) and three violence outcomes (physical assault, psychological aggression, sexual coercion). A MANOVA was conducted to test for gender differences on these variables of interest.

Correlations among the variables. Bivariate correlations were conducted separately for men and women among the two attachment dimensions (avoidance, anxiety) and the three violence outcomes (physical assault, psychological aggression, sexual coercion). Intraclass correlations were also included. We expect to see correlations between partners, demonstrating the interdependence of responses within a dyad and justifying the utilization of the Actor-Partner Interdependence Model. However, we do not expect to see correlations between partners on the attachment dimensions, based on findings from previous research (Simpson, Rholes, & Phillips, 1996; Campbell et al., 2001).

APIM. A series of mixed models analyses were conducted to test the actor and partner effects of attachment on three violence outcomes following recommended guidelines

(Badr, 2004; Campbell & Kashy, 2002; Wickham & Knee, 2012). The analyses were based on the structural equation model version of the Actor-Partner Interdependence Model (APIM; Kenny, 1996), and treated the couple as the unit of analysis. More specifically, data from both dyad members were treated as nested scores within the same group, the couple, to account for the interdependence of dyadic data. The model suggests that one partner's independent variable score influences his or her own dependent variable score (actor effect) as well as the partner's dependent variable score (partner effect). Since heterosexual couples are included in the study, gender was treated as a within-dyads variable. Attachment was treated as a mixed predictor variable, as there is variation both within and between dyads.

There were three APIM tests for the continuous models. The tests examined the effects of attachment characteristics dimensions (avoidance, anxiety) on each outcome variable (physical assault, psychological aggression, sexual coercion) separately. Gender differences in effects were tested by constraining the actor and partner paths to be the same for men and women and comparing its model fit to the model where effects are free to vary by gender. Since there were no latent variables in the free-to-vary models, the chi-square and degrees of freedom equal zero.

There were also planned to be three analogous APIM tests for the categorical models. These tests were planned to examine the effects of attachment categories (secure, dismissing, preoccupied, fearful) on each outcome variable (physical assault, psychological aggression, sexual coercion) separately. Gender effects were planned to be tested by comparing the constrained model fit to the free-to-vary model fit.

The formulas for the models are listed below:

Continuous Models.

Free-to-Vary Effects Model Equations for Physical Assault (Figure 1).

Wife Physical Assault = a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Physical Assault = e(Wife Avoidance) + f(Wife Anxiety) + g(Husband Avoidance) + h(Husband Anxiety) + E_H

Constrained Effects Model Equations for Physical Assault (Figure 1).

Wife Physical Assault = a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Physical Assault = c(Wife Avoidance) + d(Wife Anxiety) + a(Husband Avoidance) + b(Husband Anxiety) + E_H

Free-to-Vary Effects Model Equations for Psychological Aggression (Figure 2).

Wife Psychological Aggression = a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Psychological Aggression = e(Wife Avoidance) + f(Wife Anxiety) + g(Husband Avoidance) + h(Husband Anxiety) + E_H

Constrained Effects Model Equations for Psychological Aggression (Figure 2).

Wife Psychological Aggression = a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Psychological Aggression = c(Wife Avoidance) + d(Wife Anxiety) + a(Husband Avoidance) + b(Husband Anxiety) + E_H

Free-to-Vary Effects Model Equations for Sexual Coercion (Figure 3).

Wife Sexual Coercion = a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Sexual Coercion = e(Wife Avoidance) + f(Wife Anxiety) + g(Husband Avoidance) + h(Husband Anxiety) + E_H

Constrained Effects Model Equations for Sexual Coercion (Figure 3).

Wife Sexual Coercion= a(Wife Avoidance) + b(Wife Anxiety) + c(Husband Avoidance) + d(Husband Anxiety) + E_W

Husband Sexual Coercion = c(Wife Avoidance) + d(Wife Anxiety) + a(Husband Avoidance) + b(Husband Anxiety) + E_H

Categorical Models.

Free-to-Vary Effects Model Equations for Physical Assault (Figure 4).

Wife Physical Assault = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife Fearful) + h(Husband Fearful) + E_W

Husband Physical Assault = i(Wife Secure) + j(Husband Secure) + k(Wife Preoccupied) + l(Husband Preoccupied) + m(Wife Dismissing) + n(Husband Dismissing) + o(Wife Fearful) + p(Husband Fearful) + E_H

Constrained Effects Model Equations for Physical Assault (Figure 4).

Wife Physical Assault = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife Fearful) + h(Husband Fearful) + E_W

Husband Physical Assault = b(Wife Secure) + a(Husband Secure) + d(Wife Preoccupied) + c(Husband Preoccupied) + f(Wife Dismissing) + e(Husband Dismissing) + h(Wife Fearful) + g(Husband Fearful) + E_H

Free-to-Vary Effects Model Equations for Psychological Aggression (Figure 5).

Wife Psychological Aggression = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife Fearful) + h(Husband Fearful) + E_W

Husband Psychological Aggression = i(Wife Secure) + j(Husband Secure) + k(Wife Preoccupied) + l(Husband Preoccupied) + m(Wife Dismissing) + n(Husband Dismissing) + o(Wife Fearful) + p(Husband Fearful) + E_H

Constrained Effects Model Equations for Psychological Aggression (Figure 5).

Wife Psychological Aggression = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife Fearful) + h(Husband Fearful) + E_W

Husband Psychological Aggression = b(Wife Secure) + a(Husband Secure) + d(Wife Preoccupied) + c(Husband Preoccupied) + f(Wife Dismissing) + e(Husband Dismissing) + h(Wife Fearful) + g(Husband Fearful) + E_H

Free-to-Vary Effects Model Equations for Sexual Coercion (Figure 6).

Wife Sexual Coercion = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife Fearful) + h(Husband Fearful) + E_W

Husband Sexual Coercion = i(Wife Secure) + j(Husband Secure) + k(Wife Preoccupied) + l(Husband Preoccupied) + m(Wife Dismissing) + n(Husband Dismissing) + o(Wife Fearful) + p(Husband Fearful) + E_H

Constrained Effects Model Equations for Sexual Coercion (Figure 6).

Wife Sexual Coercion = a(Wife Secure) + b(Husband Secure) + c(Wife Preoccupied) + d(Husband Preoccupied) + e(Wife Dismissing) + f(Husband Dismissing) + g(Wife

Fearful) + h(Husband Fearful) + E_W

Husband Sexual Coercion = b(Wife Secure) + a(Husband Secure) + d(Wife Preoccupied) + c(Husband Preoccupied) + f(Wife Dismissing) + e(Husband Dismissing) + h(Wife Fearful) + g(Husband Fearful) + E_H

Model Comparisons. After the continuous and categorical model sets have been analyzed, the model sets were planned to be compared by outcome variable using three Chi-Square Difference Tests at the .05 significance level (Hypotheses 13-15). Since the continuous models are simpler, a non-significant Chi Square results in the continuous model being interpreted. A significant Chi Square results in the interpretation of both models.

Post Hoc Interaction Tests. Three exploratory tests of attachment interactions were tested using the SEM version of APIM for the models being interpreted following model comparison tests.

Results

Preliminary Analysis

A MANOVA used to examine gender differences on all predictor and outcome variables found no differences between men and women, $F(5, 320) = 1.767$, $p = .119$. Results are outlined in Table 1. Since the overall test found no significant differences, it is not necessary to interpret univariate tests of gender differences.

Bivariate correlations among partners' attachment characteristics and violence variables demonstrate non-independence and suggest a need to use dyadic data analyses. Correlations are reported in Table 2, where correlations for men are displayed above the diagonal, correlations for women are displayed below the diagonal, and intraclass correlations (ICCs) between men and women are displayed along the diagonal. All variables

of interest were correlated for men. For women all violence variables were correlated with each other, but attachment dimensions did not demonstrate universal correspondence. For women, attachment anxiety was correlated with attachment avoidance, physical assault, and sexual coercion but not with psychological aggression. Additionally, women's avoidance scores were correlated with physical assault and psychological aggression but not with sexual coercion. As expected, attachment variables were not correlated between men and women. However, all violence variables had strong positive relationships.

Primary Analysis

Continuous Models. Hypotheses 1-3 were supported by no gender differences in effects when parameters were constrained to be the same for men and women for physical assault, $\chi^2(4, N = 163) = 9.44$, $p = .051$, psychological aggression $\chi^2(4, N = 163) = 1.48$, $p = .83$, and sexual coercion $\chi^2(4, N = 163) = 8.95$, $p = .06$. Therefore, the results for the constrained model sets where men and women share effects were interpreted for tests of Hypotheses 4-6. Table 3 and Figure 7 display findings from the free-to-vary parameter model for physical assault as an outcome; Table 4 and Figure 8 display findings from the constrained parameter model. Table 5 and Figure 9 display findings from the free-to-vary parameter model for psychological aggression as an outcome; Table 6 and Figure 10 display findings from the constrained parameter model. Table 7 and Figure 11 display findings from the free-to-vary parameter model for sexual coercion as an outcome; Table 8 and Figure 12 display findings from the constrained parameter model.

Actor Effects. The test of whether one's own attachment characteristics predict his or her own violence was measured and tested as actor effects. The results for physical assault as an outcome are presented in the first two rows of Table 4. Results for avoidant attachment

supported Hypothesis 4, with a significant actor effect for avoidant attachment relating to physical assault (b = 7.49, SE = 1.67, z = 4.49, p<.001). However, contrary to Hypothesis 4, actor attachment anxiety did not significantly predict actor physical assault (b = 2.68, SE = 1.52, z = 1.76, p = .08). Results followed a similar pattern of support for Hypothesis 5, with a significant actor effect for attachment avoidance relating to psychological aggression (b = 10.43, SE = 2.36, z = 4.42, p<.001) but a barely non-significant actor effect for attachment anxiety relating to psychological aggression (b = 4.17, SE = 2.15, z = 1.94, p = .052). The results for Hypothesis 5 actor effects are presented in the first two rows of Table 6. Actor effects for sexual coercion as an outcome variable followed a different pattern than the other forms of violence. Regarding actor effects for Hypothesis 6, results demonstrated a significant effect for attachment anxiety on sexual coercion (b = 2.47, SE = .82, z = 3.02, p = .003) but not for attachment avoidance (b = 1.61, SE = .90, z = 1.80, p = .072). The results for Hypothesis 6 actor effects are presented in the first two rows of Table 8.

Partner Effects. The test of whether one's own attachment characteristics predict his or her partner's violence was measured and tested as partner effects. The results for physical assault as an outcome variable are presented in Table 4. Regarding partner effects, Hypothesis 4 was supported by findings for attachment anxiety (b = 4.87, SE = 1.52, z = 3.21, p = .001) and attachment avoidance (b = 4.34, SE = 1.67, z = 2.60, p = .009) relating to physical assault. Partner effects for Hypothesis 5 were also supported by the results for attachment anxiety (b = 7.28, SE = 2.16, z = 3.38, p<.001) and attachment avoidance (b = 4.97, SE = 2.36, z = 2.10, p = .035) relating to psychological aggression. Results for Hypothesis 5 are presented in Table 6. Table 8 displays results for Hypothesis 6. Results for attachment anxiety supported Hypothesis 6 (b = 2.19, SE = .82, z = 2.69, p = .007), but

results for attachment avoidance did not support the hypothesis (b = .59, SE = .90, z = .66, p = .51).

Categorical Models. Due to the requirement to dummy code the categorical variable of attachment style, the model accrued too many unidentified parameters. It was expected to have two predictor variables instead of the actual 8 that were required for the analyses. Therefore, the current study does not have enough power to test Hypotheses 7-12.

Model Comparisons. Since the current study lacks power to test the categorical models, it is impossible to compare the continuous and categorical models. Thus, Hypotheses 13-15 were ignored and the continuous model sets were evaluated for post hoc analyses.

Post Hoc Analysis

Post hoc interactions were tested for the three models where attachment was measured as a continuous variable. When physical assault was the outcome variable, the following interactions were added to the model: husband avoidance x wife avoidance, husband avoidance x wife anxiety, and husband anxiety x wife avoidance. Results for physical assault are presented in Table 9 and Figure 13. Adding interactions did not improve the model fit, χ^2 (4, N = 163) = 3.74, p = .443, and did not result in significant effects. When psychological aggression was the outcome variable, the following interactions were added to the model: husband avoidance x wife avoidance, husband avoidance x wife anxiety, and husband anxiety x wife avoidance. Results for psychological aggression are presented in Table 10 and Figure 14. Adding interactions did not improve the model fit, χ^2 (4, N = 163) = 3.21, p = .523, and did not result in significant effects. When sexual coercion was the outcome variable, the interaction between husband anxiety and wife anxiety was added to the

model. Results for sexual coercion are presented in Table 11 and Figure 15. Adding interactions did not improve the model fit, χ^2 (4, N = 163) = 8.48, p = .08.

Discussion

The current study examined three forms of partner violence as a function of both partners' adult attachment characteristics in order to parse out the extent to which each partner's characteristics contribute to the maintenance of relationship violence by using a dyadic statistical design. The current study found that the attachment characteristics of both partners maintain physical assault, psychological aggression, and sexual coercion. Understanding of the influence of both partners' attachment characteristics may afford targeted interventions to certain types of couples.

First, the current study tested for differences in effects of attachment on violence perpetrated by men and women. Because no gender differences were found, one can assume that women and men influence each other to a relatively equal extent in terms of attachment and violence. For this reason, following hypotheses were tested where effects for men and women were constrained to be the same.

Results from the current study suggest that both one's own attachment characteristics and those of a romantic partner can influence one's own perpetration of IPV. The types of effects, however, differed depending on the type of IPV under question. Physical assault and psychological aggression shared similar patterns of effects between partners, where one's own violence perpetration could be predicted by one's own attachment avoidance. This finding is consistent with previous literature on individual characteristics (Babcock et al., 2000; Holtzworth-Munroe et al., 1997). Since people with elevated avoidance scores are generally resistant to partner dependency and uncomfortable with closeness, violence may

function as a way to create physical or emotional distance. In other words, it may be used to exert control over the other partner in order to facilitate the desired avoidance. Given existing literature on the presence of attachment anxiety features for violent men, it is surprising that the current study did not find actor effects for attachment anxiety on physical assault and psychological aggression. Perhaps anxious attachment on its own is not enough to predict one's own perpetration of IPV when partner-level factors are taken into account. Another possibility is that variables outside the scope of the current study are moderating the relationship between attachment anxiety and violence.

Regarding partner effects for physical assault and psychological aggression, elevated attachment avoidance or anxiety for the partner predicted one's own perpetration. It is theorized that violence serves the same function of controlling the other partner, but the reasons for control depend on the partner's attachment features. Perhaps lack of trust in the partner's commitment can influence violence perpetration in order to exert power in the relationship and control over the partner to stay romantically close. However, having a partner who worries about relationship abandonment can influence one's own violence perpetration for a different reason. It is possible that violence in this case stems from frustration with the partner's fear of separation, and is used as a harmful way to remove the unwanted worries being expressed by the other partner.

Effects for sexual coercion suggest that actor and partner attachment anxiety are predictors of sexual violence perpetration by both men and women. In other words, elevated attachment anxiety for either partner predicted sexual coercion perpetration by one of the partners. Individuals scoring high on anxious attachment desire high levels of intimacy and approval from their partners, and these thoughts and feelings may have been manifested as

sexually coercive behaviors for the current sample.

Unfortunately, Hypotheses 7-15 were unable to be tested due to power constraints on the models. Therefore, it was impossible to examine the effects of attachment style on IPV and to compare the continuous and categorical measurements of attachment. Overall, however, the hypotheses for the continuous models of attachment were confirmed and suggest that both partners influence each other to maintain partner violence.

Findings from the current study are in line with the risk regulation model (Murray, Holmes, & Collins, 2006), which to our knowledge has never been extended to IPV couples. The model proposes that individuals behave in ways that balance closeness seeking with protection from rejection in order to feel safely dependent in the relationship. People act in ways that are self-protective when faced with interpersonal risk. Attachment avoidance may be related to internal working models that the individual is vulnerable to rejection, and thus, has resulted in distancing behaviors to protect the self from the consequences of rejection. In the current study, attachment avoidance was associated with actor and partner perpetration of physical assault and psychological aggression. Thus, individuals were more likely to endorse self-protective attachment avoidance when those forms of IPV were present in the relationship. Emotional and physical distancing behaviors (i.e. physical assault and psychological aggression) may be elicited by self-protective attachment avoidance of rejection by either partner.

According to the risk regulation model, some people with higher self-confidence may try to increase closeness behaviors following forms of rejection (Murray, Derrick, Leder, & Holmes; 2008). Partner attachment anxiety was associated with perpetration of all three forms of IPV in the current study. It is possible that the perpetrator reacts with violence to

the unwanted closeness from the anxious partner.

Although IPV has been previously explained in terms of attachment at the individual level for male-to-female perpetrated violence, the current study improved on previous research by taking into account the influence of both individuals on the phenomenon of IPV no matter the gender of the perpetrator. Use of the Actor Partner Interdependence Model (Kenny, 1996) in IPV research allows for a more appropriate analysis of how characteristics of both partners can influence each other to maintain violence. It also allows for the study of a broader scope of relationship dynamics and exchange of relationship needs between partners. If the relationship needs are unmet, the relationship could lead to violence, as in the current study, or to other relationship problems like resentment or dissolution, or even to individual problems like anxiety, depression, and other forms of psychopathology.

Given the high rates of bidirectional violence (Archer, 2000; Langhinrichsen-Rohling, et al., 2012), studies of men and women as perpetrators are necessary. If researchers limit the study to individual-level factors or gender-specific perpetration, then IPV may not be accurately understood. It is important for future researchers to take into account the interdependent nature of couples' characteristics in order to appropriately study IPV and attachment between romantic partners.

Limitations/Criticisms

The current study has several limitations that should be addressed in the future. First, the sample under investigation was limited to distressed violent and nonviolent couples that elected to participate in a research project. It is unclear how these results would generalize to shelter samples or court-ordered offenders.

There is an ongoing debate regarding the measurement of attachment. Measuring

attachment characteristics categorically is preferred in clinical settings due to the ease in comparing phenomena to prototypical cases for treatment purposes (Maunder & Hunter, 2009), but it is criticized in research settings for its inability to distinguish meaningful differences within categories (Mikulincer & Shaver, 2007). However, the method of converting attachment dimensions to categories excludes individuals with scores at the median, which was expected to eliminate approximately 7% of subjects (Collins, 2008) and actually eliminated approximately 11% of subjects in the current study. Regardless of the clinical utility of categories, the method used in this study to procure them was too costly in terms of power to make them useful statistically.

Third, we opted to create a composite score of violence for each partner's outcome variables. Although this method was chosen to address concerns regarding biased reporting of violence, an alternative model may include self-report and partner-report of violence for each partner (four total outcomes) as outcome variables to elucidate the level of influence attachment characteristics may separately have on different types of reports. Concerns regarding statistical power guided the decision to alternatively create a composite score in the present analyses. Future studies may be better served to examine how attachment characteristics influence cross-reporters (van Dulmen & Goncy, 2010).

The current study utilized the Adult Attachment Scale (Collins & Read, 1990), a self-report measure of attachment that has demonstrated good reliability and validity. The use of self-report measures of attachment has been criticized in comparison to interview measures (e.g. AAI; George, Kaplan, & Main, 1985), as it has been proposed that self-report and interview measures capture different components of adult attachment and demonstrate a low correlation to each other (r = .09; Roisman et al., 2007). More specifically, self-report

measures are likely to capture conscious attachment attitudes, whereas interview measures are more likely to capture unconscious attachment attitudes (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2009).

A final limitation of the current study is that its cross-sectional design prevents the distinction between causal and correlational relationships of the predictor and outcome variables. Even though causal effects are inconclusive in this study, it is hopeful that the current findings will serve as a foundation for the association between actor and partner characteristics and violence that may be addressed in future longitudinal studies designed to uncover causal relations.

Clinical Implications

Results from the current study suggest that attachment characteristics of both partners influence each other to maintain IPV. Batterer intervention programs may be better served to consider the influence of both partners' attachment history in the design of a treatment plan. Clinical interventions may be more effective by incorporating skills to address attachment insecurity themes between partners via functional analysis of violence.

Let us consider a couple where one partner has elevations for attachment anxiety and the other partner has elevations for attachment avoidance. The behaviors by the partner with anxious attachment features may stem from a fear of abandonment and a desire for closeness. The partner's need is to feel a sense of relationship security and closeness from the other partner. Thus, the anxious partner may be overly involved to the point of seeming annoying to the other partner in a desperate attempt to feel close to the other. The partner with avoidant attachment features may interpret the involved behaviors as overwhelming or intrusive, which may result in the perpetration of IPV. The avoidant partner's need in that

moment is to be independent and to have the other partner stop engaging in behaviors that threaten that independence. In this case, both partner's needs are not being met and violence is being used by the avoidant partner as a way to stop the unwanted behaviors from happening.

When this exchange is evaluated at the functional level, it is apparent that slight adjustments to meet the other partner's attachment needs may have prevented violence. For example, a signal could be devised to communicate that one's attachment needs are not being met, which could prompt a brief time out or discussion about needs for closeness. More generally, finding ways to communicate about attachment needs and to follow through with a plan to provide those needs for each other in an adaptive way may be helpful. The anxious partner may need the other partner to use physical forms of affection, like hugging or kissing, in order to feel secure in the relationship and less likely to engage in preoccupied behaviors. On the other hand, the avoidant partner may need an agreement from the other to have scheduled independent time in order to have some agreed-upon temporary distance. In this way, behaviors from both partners can be understood in terms of serving some relationship attachment needs, which can guide treatments to find more adaptive ways to have the needs met that do not include violence.

Current batterer intervention programs are criticized for being largely ineffective (Arias, Arce & Vilariño, 2013; Babcock, Green & Robie, 2004; Feder & Wilson, 2005). One possible reason for their inefficacy is that they target the batterer's characteristics without taking into account relationship factors that may be triggering or maintaining partner violence (Babcock, Green & Robie, 2004). There is mounting evidence that partner violence is usually not unidirectional, and may be better studied as a bidirectional process between

both partners. In cases of bidirectional violence and female-perpetrated violence, perhaps including both partners in treatment would improve the effectiveness of domestic violence interventions.

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Table 1. Test of Sex Differences for Attachment Dimensions and Violence Variables (N = 163)

Study Variable and Group	Score		Analysis of Variance	
	Mean	*SD*	*F*	*p*
Anxiety			1.56	.21
Men	2.5	0.7		
Women	2.6	0.7		
Avoidance			.01	.94
Men	2.9	0.6		
Women	2.9	0.6		
Physical Assault			.09	.77
Men	13.2	20.1		
Women	13.9	19.5		
Psych. Aggression			2.03	.16
Men	36.8	26.7		
Women	41.3	29.8		
Sexual Coercion			1.07	.30
Men	6.7	11.6		
Women	5.4	9.4		

Table 2. Correlations Among Study Variables

Study Variables	1	2	3	4	5
1. Anxiety	-.070	0.279***	0.1666*	0.207**	0.240**
2. Avoidance	0.333***	-0.040	0.306***	0.264**	0.225**
3. Physical Assault	0.165*	0.227**	0.722***	0.711***	0.552***
4. Psych. Aggression	0.144	0.259**	0.654***	0.729***	0.612***
5. Sexual Coercion	0.168*	0.114	0.593***	0.500***	0.589***

Note. Correlations for men appear above the diagonal; correlations for women appear below the diagonal. Correlations along the diagonal are absolute agreement intraclass correlations (ICCs) between men and women. *p<.05, **p<.01, ***p<.001.

Table 3. APIM of Free-to-Vary Paths for Continuous Attachment on Physical Assault (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				0
Actor Effects				
$M_{Anx} \rightarrow M_{Physical\ Assault}$	2.77	2.13	1.30	
$W_{Anx} \rightarrow W_{Physical\ Assault}$	2.69	2.17	1.24	
$M_{Av} \rightarrow M_{Physical\ Assault}$	8.92***	2.35	3.80	
$W_{Av} \rightarrow W_{Physical\ Assault}$	6.21**	2.35	2.65	
Partner Effects				
$M_{Anx} \rightarrow W_{Physical\ Assault}$	6.57**	2.11	3.11	
$W_{Anx} \rightarrow M_{Physical\ Assault}$	2.88	2.19	1.32	
$M_{Av} \rightarrow W_{Physical\ Assault}$	2.03	2.33	.87	
$W_{Av} \rightarrow M_{Physical\ Assault}$	6.90**	2.37	2.92	

Note. The estimates are unstandardized regression coefficients. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Physical\ Assault}$ = male physical assault; $W_{Physical\ Assault}$ = female physical assault. **p<.01; ***p<.001.

Table 4. APIM of Constrained Paths for Continuous Attachment on Physical Assault (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				9.44
Actor Effects				
Anx→Physical Assault	2.68	1.52	1.76	
Av→Physical Assault	7.49***	1.67	4.49	
Partner Effects				
Anx→Physical Assault	4.87**	1.52	3.21	
Av→Physical Assault	4.34**	1.67	2.60	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. **p<.01; ***p<.001.

Table 5. APIM of Free-to-Vary Paths for Continuous Attachment on Psychological Aggression (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				0
Actor Effects				
$M_{Anx} \rightarrow M_{Psych.\ Aggression}$	5.75*	2.88	2.00	
$W_{Anx} \rightarrow W_{Psych.\ Aggression}$	2.61	3.31	.79	
$M_{Av} \rightarrow M_{Psych.\ Aggression}$	9.43**	3.17	2.98	
$W_{Av} \rightarrow W_{Psych.\ Aggression}$	11.50**	3.57	3.22	
Partner Effects				
$M_{Anx} \rightarrow W_{Psych.\ Aggression}$	9.98**	3.22	3.10	
$W_{Anx} \rightarrow M_{Psych.\ Aggression}$	5.03	2.96	1.70	
$M_{Av} \rightarrow W_{Psych.\ Aggression}$	3.02	3.55	.85	
$W_{Av} \rightarrow M_{Psych.\ Aggression}$	6.65*	3.19	2.08	

Note. The estimates are unstandardized regression coefficients. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Psych.\ Aggresson}$ = male psychological aggression; $W_{Psych.\ Aggression}$ = female psychological aggression. *p<.05; **p<.01.

Table 6. APIM of Constrained Paths for Continuous Attachment on Psychological Aggression (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				1.48
Actor Effects				
Anx→Psych. Aggression	4.17	2.15	1.94	
Av→Psych. Aggression	10.43***	2.36	4.42	
Partner Effects				
Anx→Psych. Aggression	7.28***	2.16	3.38	
Av→Psych. Aggression	4.97*	2.36	2.10	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. *p<.05; ***p<.001.

Table 7. APIM of Free-to-Vary Paths for Continuous Attachment on Sexual Coercion (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				0
Actor Effects				
$M_{Anx} \rightarrow M_{Sexual\ Coercion}$	3.24*	1.26	2.56	
$W_{Anx} \rightarrow W_{Sexual\ Coercion}$	1.93	1.09	1.77	
$M_{Av} \rightarrow M_{Sexual\ Coercion}$	3.13*	1.39	2.25	
$W_{Av} \rightarrow W_{Sexual\ Coercion}$	1.10	1.17	.93	
Partner Effects				
$M_{Anx} \rightarrow W_{Sexual\ Coercion}$	2.69*	1.06	2.55	
$W_{Anx} \rightarrow M_{Sexual\ Coercion}$	1.41	1.30	1.08	
$M_{Av} \rightarrow W_{Sexual\ Coercion}$	-.19	1.17	-.16	
$W_{Av} \rightarrow M_{Sexual\ Coercion}$	2.46	1.40	1.75	

Note. The estimates are unstandardized regression coefficients. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Sexual\ Coercion}$= male sexual coercion; $W_{Sexual\ Coercion}$= female sexual coercion. *$p<.05$.

Table 8. APIM of Constrained Paths for Continuous Attachment on Sexual Coercion (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				8.95
Actor Effects				
Anx→Sexual Coercion	2.47**	.82	3.02	
Av→Sexual Coercion	1.61	.90	1.80	
Partner Effects				
Anx→Sexual Coercion	2.19**	.82	2.69	
Av→Sexual Coercion	.59	.90	.66	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. **p<.01.

Table 9. APIM of Constrained Paths for Continuous Attachment and Interactions on Physical Assault (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				3.74
Actor Effects				
Anx→Physical Assault	-4.37	7.32	-.60	
Av→Physical Assault	-6.04	10.86	-.56	
Partner Effects				
Anx→Physical Assault	-6.45	7.33	-.88	
Av→Physical Assault	-5.86	10.86	-.54	
Interaction Effects				
M_{Av} x W_{Av}→$M_{Physical\ Assault}$	2.39	3.71	.64	
M_{Av} x W_{Av}→$W_{Physical\ Assault}$	.61	3.71	.17	
M_{Av} x F_{Anx}→$M_{Physical\ Assault}$	3.30	2.51	1.31	
M_{Av} x F_{Anx}→$W_{Physical\ Assault}$	2.46	2.51	.98	
M_{Anx} x F_{Av}→$M_{Physical\ Assault}$	2.44	2.48	.99	
M_{Anx} x F_{Av}→$W_{Physical\ Assault}$	4.34	2.48	1.75	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Physical\ Assault}$ = male physical assault; $W_{Physical\ Assault}$ = female physical assault.

Table 10. APIM of Constrained Paths for Continuous Attachment and Interactions on Psychological Aggression (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				3.21
Actor Effects				
Anx→Psych. Aggression	5.59	10.32	.54	
Av→Psych. Aggression	-13.57	15.41	-.88	
Partner Effects				
Anx→Psych. Aggression	-6.50	10.50	-.62	
Av→Psych. Aggression	-6.70	15.55	-.43	
Interaction Effects				
M_{Av} x W_{Av}→$M_{Psych.\ Agg}$	4.54	5.28	.86	
M_{Av} x W_{Av}→$W_{Psych.\ Agg}$	4.01	5.31	.76	
M_{Av} x F_{Anx}→$M_{Psych.\ Agg}$	4.14	3.58	1.16	
M_{Av} x F_{Anx}→$W_{Psych.\ Agg}$	-.74	3.56	-.21	
M_{Anx} x F_{Av}→$M_{Psych.\ Agg}$	-.08	3.48	-.02	
M_{Anx} x F_{Av}→$W_{Psych.\ Agg}$	5.28	3.57	1.48	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Psych.\ Agg}$ = male psychological aggression; $W_{Psych.\ Agg}$ = female psychological aggression.

Table 11. APIM of Constrained Paths for Continuous Attachment and Interactions on Sexual Coercion (N = 163 dyads)

APIM Parameters	Estimate	SE	Z	χ^2
				8.48
Actor Effects				
Anx→Sexual Coercion	-2.88	3.76	-.76	
Av→Sexual Coercion	1.78*	.90	1.98	
Partner Effects				
Anx→Sexual Coercion	-3.17	3.79	-.84	
Av→Sexual Coercion	.76	.90	.84	
Interaction Effects				
M_{Anx} x W_{Anx}→$M_{Sex\ Coercion}$	2.25	1.47	1.53	
M_{Anx} x W_{Anx}→$W_{Sex\ Coercion}$	2.06	1.46	1.41	

Note. The estimates are unstandardized regression coefficients. Anx = attachment anxiety; Av = attachment avoidance. M_{Anx} = male attachment anxiety; W_{Anx} = female attachment anxiety; M_{Av} = male attachment avoidance; W_{Av} = female attachment avoidance; $M_{Sex\ Coercion}$ = male sexual coercion; $W_{Sex\ Coercion}$= female sexual coercion. *p<.05.

Figure 1. Path Model for Physical Assault When Attachment is a Continuous Variable

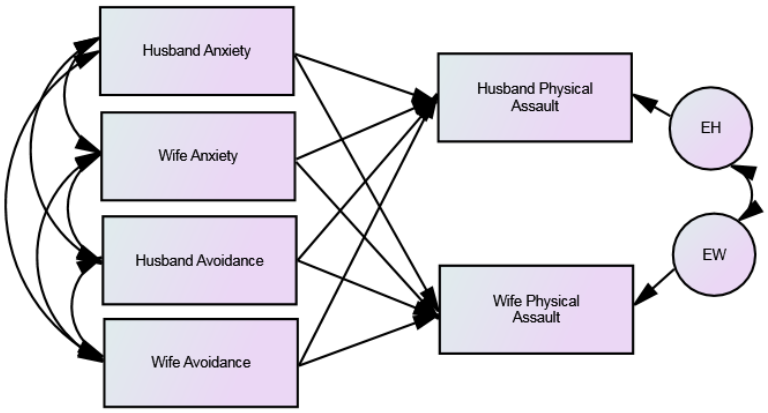

Figure 2. Path Model for Psychological Aggression When Attachment is a Continuous Variable

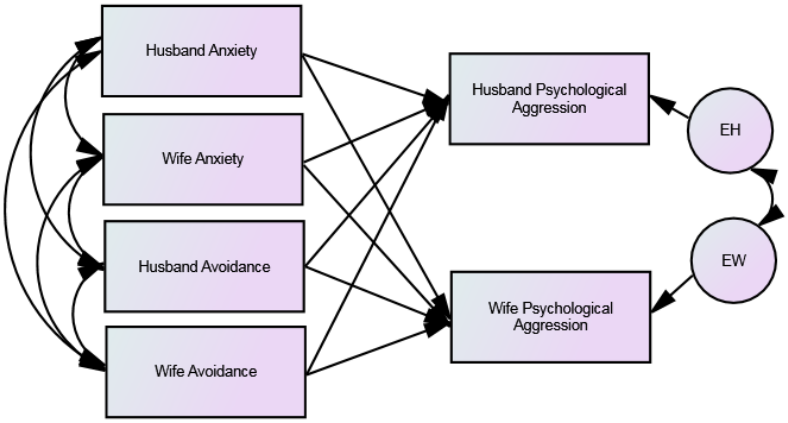

Figure 3. Path Model for Sexual Coercion When Attachment is a Continuous Variable

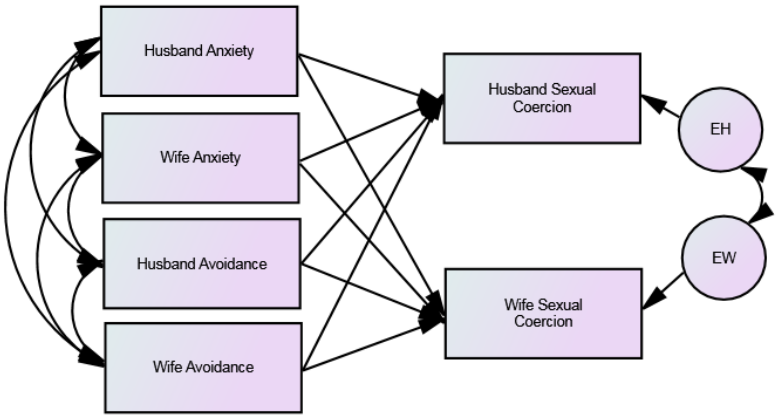

Figure 4. Free-to-Vary Path Model for Physical Assault When Attachment is a Categorical Variable

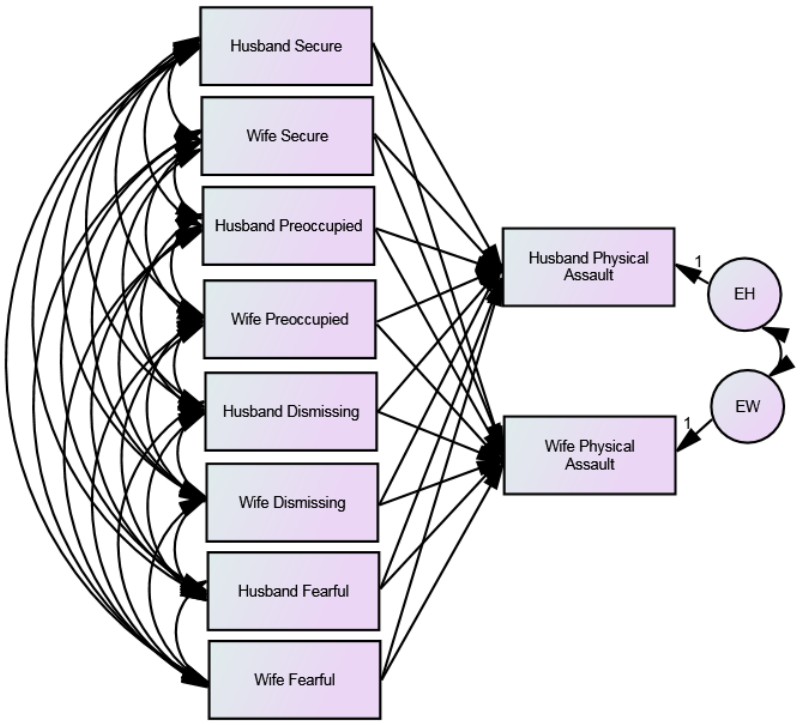

Figure 5. Path Model for Psychological Aggression When Attachment is a Categorical Variable

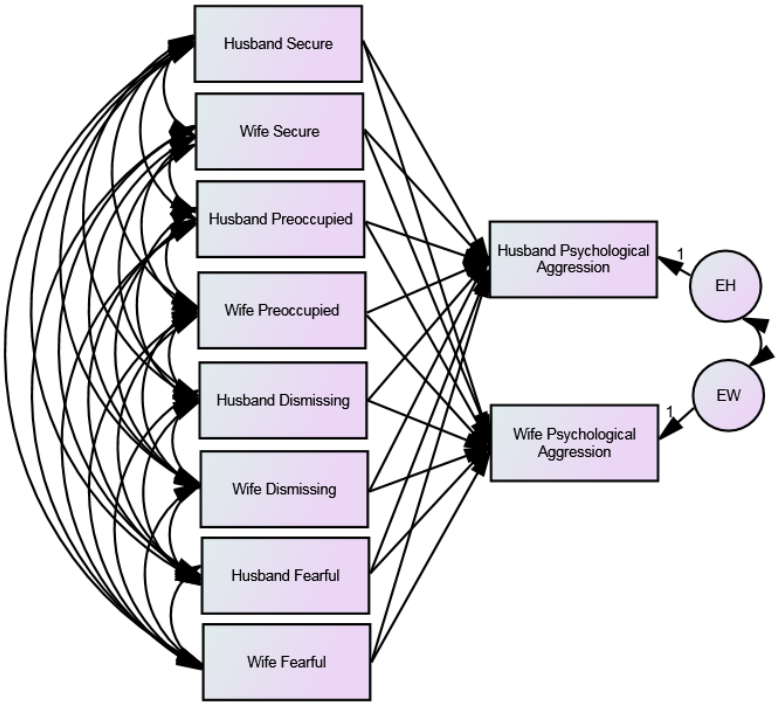

Figure 6. Path Model for Sexual Coercion When Attachment is a Categorical Variable

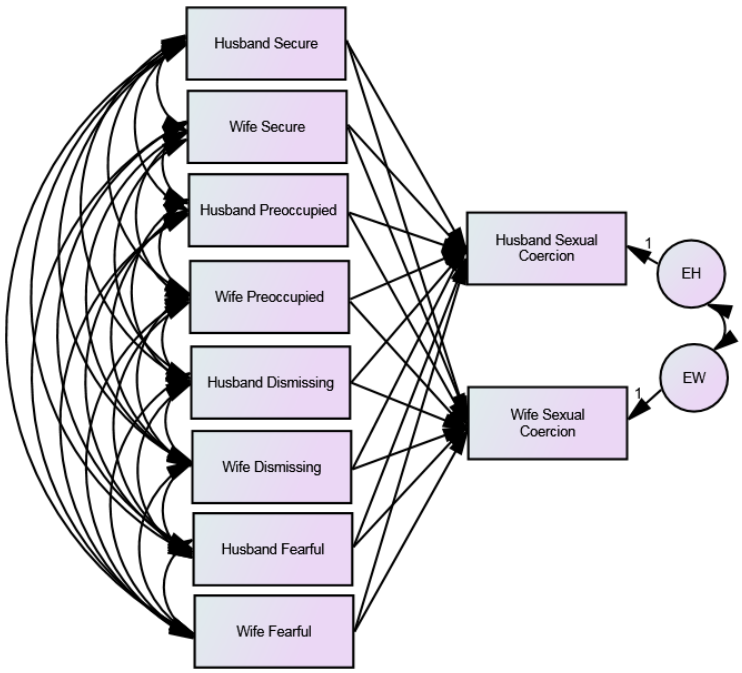

Figure 7. Free-to-Vary Path Model Plus Parameters for Physical Assault When Attachment is a Continuous Variable

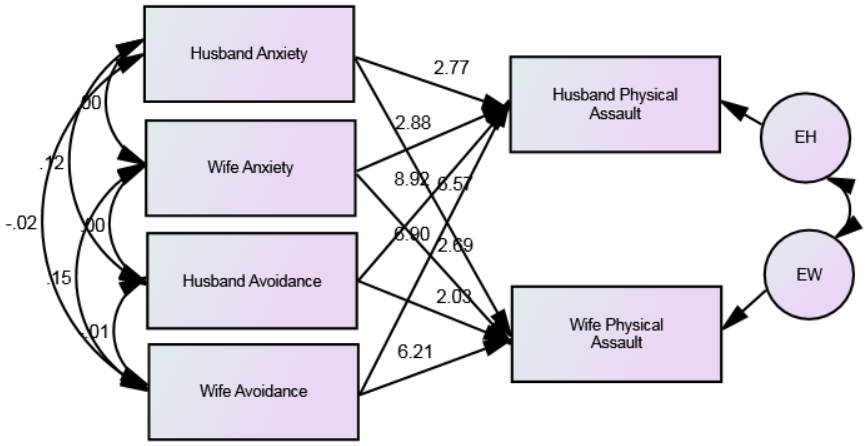

Figure 8. Constrained Path Model Plus Parameters for Physical Assault When Attachment is a Continuous Variable

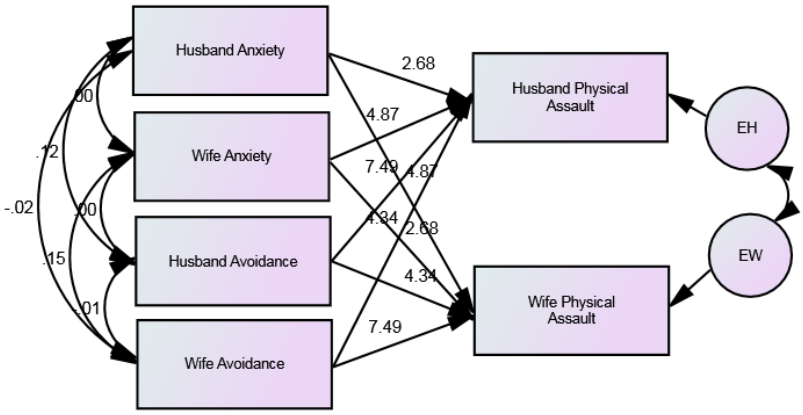

Figure 9. Free-to-Vary Path Model Plus Parameters for Psychological Aggression When Attachment is a Continuous Variable

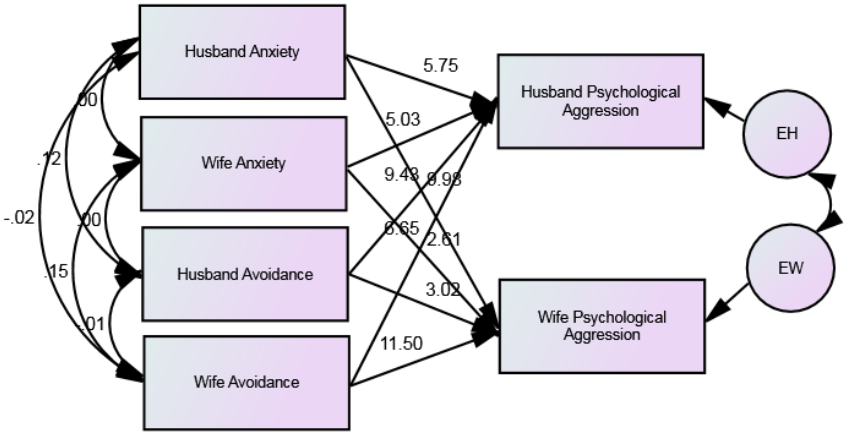

Figure 10. Constrained Path Model Plus Parameters for Psychological Aggression When Attachment is a Continuous Variable

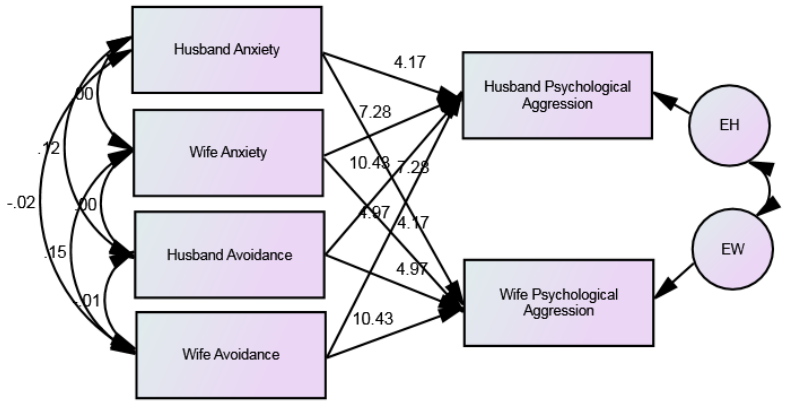

Figure 11. Free-to-Vary Path Model Plus Parameters for Sexual Coercion When Attachment is a Continuous Variable

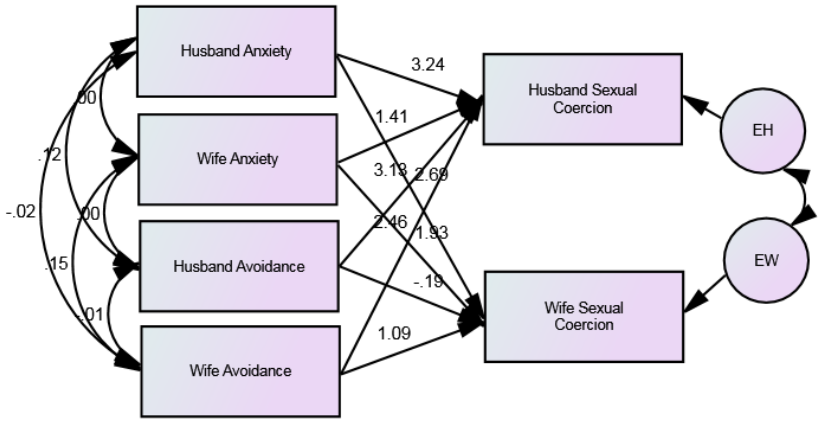

Figure 12. Constrained Path Model Plus Parameters for Sexual Coercion When Attachment is a Continuous Variable

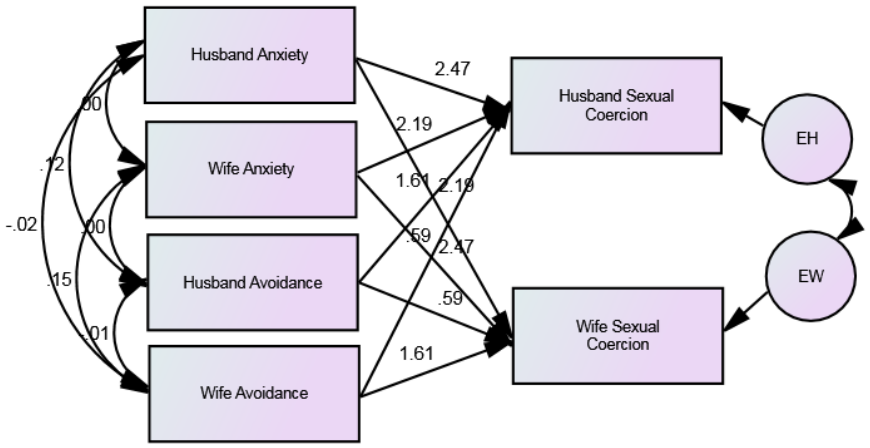

Figure 13. Path Model With Interactions for Physical Assault When Attachment is a Continuous Variable

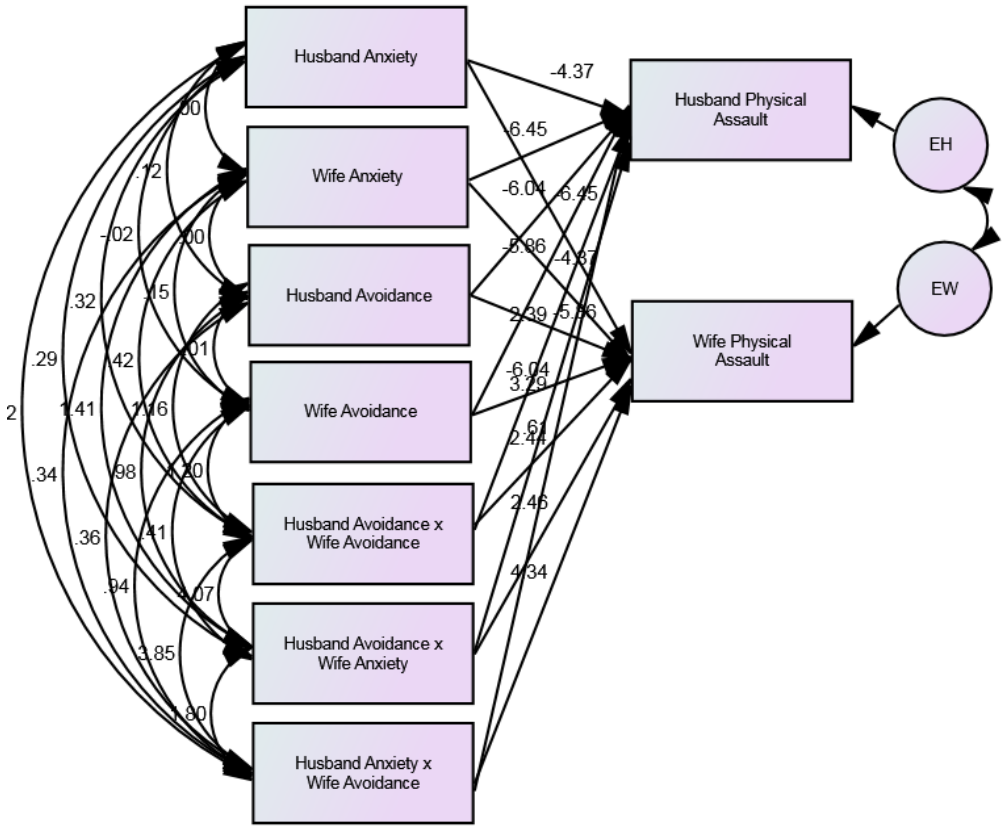

Figure 14. Path Model With Interactions for Psychological Aggression When Attachment is a Continuous Variable

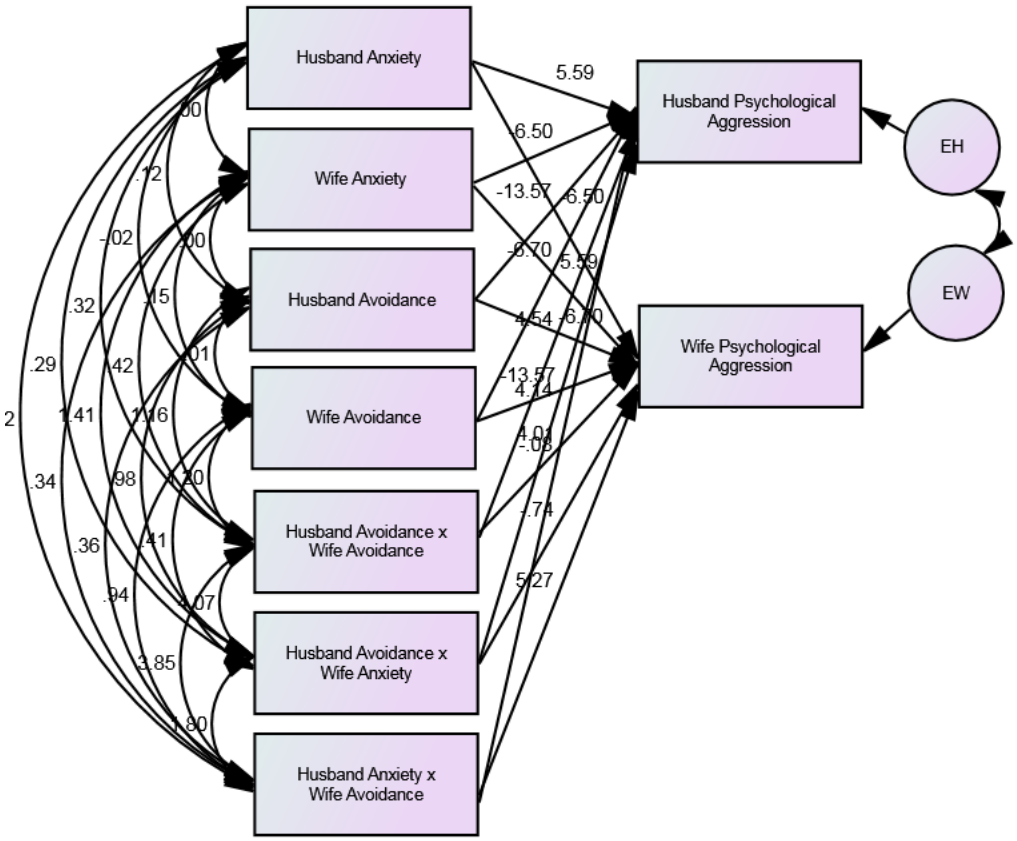

Figure 15. Path Model With Interactions for Sexual Coercion When Attachment is a Continuous Variable